National Ocean Service
National Data Support for Coastal Marine GIS's

Project Objective:

The project objective is to design and develop a National Ocean Service (NOS) Marine Geographic Information System (MGIS). This NOS MGIS will support National Spatial Data Infrastructure (NSDI) framework data needs for users of the Nation's coastal ocean - particularly those that use GIS technologies for analysis and decision making. The NOS MGIS will provide a Web-based user-friendly means to view these data and download them for manipulation and analysis. Meeting this objective requires: (1) the building of vector databases for the most up-to-date NSDI base data sets collected by NOS (as well as interfaces to databases in agencies who collect other base data), and (2) the development of a Web-based GIS viewer, specifications and standard formats for data and metadata downloading, quality control standards, and other design criteria for use of the framework data sets. (This project depends on and must be closely coordinated with the projects on ***"Spatial Data Infrastructure Enhancement"*** and ***"Shoreline Digital Data.***")

Project Overview:

NOS presently has numerous geographic data sets which are needed by other federal agencies (such as the U.S. Geological Survey, U.S. Army Corps of Engineers, Environmental Protection Agency, and the National Marine Fisheries Service), state and local agencies, academia, and private companies. Although the current NOS MapFinder Project allows for public access to a **catalog** of NOS data sets, the data are not easily accessible or viewable, and, most importantly, are not in forms that can be easily imported into users' GIS's.

The first aim of this project is to assure that the necessary vector databases of NSDI framework data sets such a shoreline, hydrography, and geodetic conrol are built by NOS (to design specifications that will allow maximum support for coastal GIS's). The second aim is to provide the users with Web-based tools that will allow them to view or "layer" multiple NOS data sets through a GIS viewer for their area of interest and easily download specific data (or follow pointers to the special data sets that, for example, might be proprietary). NOS's MapFinder may still function as the "front-end" catalog to the MGIS viewer.

The Web-based viewing and accessing tools will use existing software wherever possible, such as the ESRI ArcExplorer Plug-in for Internet browsers or the prototype digital data GIS viewer developed by the Coast Survey Development Laboratory. Such tools will be designed to help the users decide which data are appropriate to download for their use. Over time, limited GIS overlay and analysis capabilities can be provided on-line so that the user can make informed decisions on what data to download, or for limited on-line data analysis. Coastal planners, for example, could overlay NOS marine information data sets such as shoreline, bathymetry, and bottom characteristics within their county boundary, view the actual data, and observe how the data relate for resource planning. HAZMAT coordinators could quickly view marine information

sets to aid in their response to oil spills. Additional enhancements, including data querying and standard data analysis tools (such as port management, dredging, and nutrient transport), could be added to the project in the future.

This project will utilize NOS vector databases containing the latest NSDI framework geographic data and also create the design criteria and categories for future data sets that are deemed important to the coastal marine user communities. Database design will include maintenance requirements for each data set and establish quality criteria for data set acceptability into the database. Prototype databases (for a test geographic area) of the most important vector databases (shoreline, bathymetry, etc.) must be built before the GIS viewer and related analysis tools can be developed and tested.

Some vector databases which will be built to support this coastal marine GIS's include:

Shoreline	Geographic variation in tidal datums and characteristics
Bathymetry	Geographic variation in currents, salinity, and temperature
Bottom Characteristics	Maritime Limits
Geodetic Control	AWOIS
NMS Boundaries	Marine Baseline and Boundaries
Navigation Layer	

The GIS viewer will provide public access through standard geographic views which may include:

Census Tracts & Blocks	Nautical Chart Footprints
Congressional Districts	USGS Topographic Quadrangle Footprints
Coastal State, County, and Municipality Boundaries	Watershed - Estuarine Zones

Project Partners:

The NOS project partners are: the Office of Coast Survey (OCS), Coastal Services Center (CSC), National Geodetic Survey (NGS), the Special Projects Office (SPO), and the Center for Operational Ocean Products (CO-OPS). The National Geophysical Data Center (NGDC) in NESDIS will be an important NOAA partner. Other federal participation may include,USGS, USCG, USACE, EPA and others .

Proposed Milestones

FY 1999

- Create a Coastal Marine GIS Cross-Cut Team by 9/15/98
- Develop common design criteria for databases to support marine GIS.
- Develop a prototype vector database for U.S. shoreline.
- Develop a prototype vector database for U.S. bathymetry.

- Develop a prototype Web-based GIS viewer by.
- Establish an interagency team to work on making data sets available by.

FY 2000

- Test beta Web-based GIS viewer on prototype bathymetry and shoreline databases.
- Determine other vector databases to be started.
- Add datasets to vector database for U.S. bathymetry for other selected geographic areas.
- Add datasets to vector database for U.S. shoreline for other selected geographic areas.
- Assess database design and Web-based GIS viewer, and propose design improvements.

The marine GIS cross-cut team will better define performance measures and milestone by the end of October 1998.